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10/021,747	12/13/2001	Tadashi Ishiguro	448564/0042	6237

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EXAMINER

DICUS, TAMRA

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,747

Applicant(s)

TADASHI ISHIGURO

Examiner

Tamra L. Dicus

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-- Th MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the amendment filed June 19, 2003. Cancellation of claim 3 is acknowledgment. The 112 rejections are withdrawn due to Applicant's amendments. The 102b rejection is withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 4-7 are rejected under 35 U.S.C. 103(a) as obvious over USPN 5,489,466 to Inaba et al. and USPN 5,747,157 to Hashimoto et al. in view of USPN 6,607,806 to Kato et al.

3. Inaba teaches a magnetic recording medium comprising a nonmagnetic support, a lower nonmagnetic layer (lower coating layer) and an upper magnetic (cleaning) layer for video and computer tapes. The lower nonmagnetic layer is coated on the support, comprises an inorganic nonmagnetic powder dispersed in a binder, and is surface-coated with an inorganic oxide. The upper magnetic layer has a dry thickness of 1.0 micrometer or less, preferably 0.01 to 0.8 μm (meeting range 0.05 to 1.0 μm) and comprises a dispersion of a ferromagnetic powder in a binder, same material as Applicant includes. The upper magnetic layer is coated onto the lower nonmagnetic layer. The lower nonmagnetic layer has a thickness of 0.5 μm to 10 μm . See col. 1, lines 10-15, col. 3, lines 30-50, col. 4, lines 20-39, col. 21, lines 25-40, and patented claim 1. At col. 28, line 35, Inaba explains the media has a total thickness smaller than 9.5 μm ,

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meeting the range from 4.0 to 15 μm . Inaba teaches the magnetic recording media is in the form of tape (new limitation) at col. 53, lines 35-38, col. 54, line 35.

While Inaba doesn't refer to these layers as cleaning and lower coating layers, the Examiner takes the position that since they are of the same material, they are functional equivalents. Moreover, Hashimoto teaches a magnetic recording medium which removes dust and fluff accumulation at col. 16, lines 36-68 and Table 2. Such teaching is equivalent to Applicant's new limitation "constructed to clean a head...as it slides along the head...constructed to remove debris from a recording head". It would have been obvious to one of ordinary skill in the art to modify the magnetic recording medium to provide a cleaning property because Hashimoto teaches magnetic recording mediums clean heads of recording mediums as cited above.

Inaba teaches fatty acids added to an upper layer, but is silent to the fatty acids including esters and amines and to protrusions existing. Kato teaches a magnetic recording medium. Kato teaches fatty acids including esters and amines as additives having a lubrication effect at col. 8, line 23-col. 9, line 15. Lubricants are coated on the surface of a magnetic layer (col. 9, lines 35-41). It would have been obvious to one of ordinary skill in the art to modify the medium of Inaba to further include fatty acid esters and amines because Kato teaches they are suitable lubricants for a magnetic recording medium as cited above. Kato teaches it is known to provide the number of protrusions, height, and surface area per x micrometers squared, are optimizable features and all effect the surface characteristics of a film. Kato teaches surface characteristics are dependent upon the amount of fillers added to the support at col. 10, lines 55-60 and further at col. 11, lines 1-5. Kato teaches surface protrusion distribution of the support can be controlled

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arbitrarily by fillers, e.g., the number of protrusions having sizes of from 0.01 microns to 1 microns can be controlled each within the range of from 0 to 2,000 per 0.1 mm^2 . for obtaining desired electromagnetic characteristics and durability. Hence, it would have been obvious to one of ordinary skill in the art to modify the magnetic media of Inaba to provide protrusions of certain number and degree, since Kato teaches protrusions and surface roughness is controlled by the size and amount of fillers as cited above. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272. As Kato teaches, such result effective variables as the number of protrusions, height, and surface area per x micrometers squared, effect the surface characteristics.

Regarding claim 5, at col. 6, lines 40-50, Inaba teaches polyurethane used in the lower nonmagnetic layer and upper magnetic layer containing at least one polar group selected from the group consisting of $-\text{COOM}$, $-\text{OSO}_3\text{M}$, $-\text{SO}_3\text{M}$, where M, represents a hydrogen atom.

Regarding the $-\text{OH}$ groups on polyurethane, Inaba teaches it is well known to use 3 or more $-\text{OH}$ groups at col. 3, line 10, using pentaerythritol and trimethylolpropane, which meets claim 6.

Further regarding claim 2, polyol diisocyanates are also included in the binder lower coating at col. 21, lines 42-55 and cyclic structure in Example 4-2. Also note describing the starting materials of polyurethane is a process limitation. Patentability of an article depends on the article itself and not the method used to produce it (see MPEP 2113). Additionally addressing claims 2 and 5-6, Hashimoto teaches a it is well known to provide to a magnetic layer a polyurethane resin that is a reaction product obtained by using a polyol and an organic diisocyanate as main starting materials. Hashimoto further explains the polyurethane resin

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containing as components of a polyol 15 to 40% by weight of a short -chain diol component having a cyclic structure, and 10 to 50% by weight of a long-chain polyether polyol component, and further including a polar group -containing long-chain polyol component having a molecular weight of 500 to 5,000. To improve dispersibility, the urethane resin of Hashimoto contains a polar group. Hashimoto uses a strong polar group selected from the group consisting of $--SO_3M$, $--OSO_3M$, $--COOM$, $--PO_3M_2$, $--OPO_3M_2$, $--NR_2$, and $R'COO^-$ where M is a hydrogen atom, an alkali metal or ammonium, and R and R' each are an alkyl group having 1 to 12 carbon atoms. Hashimoto also teaches it is well known to add 3 to 20 -OH groups per polyurethane molecule. See col. 3, lines 9-35, and col. 4, lines 40-45. Col. 5, lines 23-26 describe polyurethane having a polar group content from 1×10^{-5} eq/g to 2×10^{-4} eq/g as in claim 4.

Addressing claim 7, that the cleaning layer is formed on the lower coating by a wet-on-wet process while wet is not germane to patentability. At col. 27, lines 5-25, Inaba teaches where the lower coating layer is performed by a wet-on-wet coating process while wet. Further, product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. Patentability of an article depends on the article itself and not the method used to produce it (see MPEP 2113). Furthermore, the invention defined by a product-by-process invention is a product NOT a process. *In re Bridgeford*, 357 F. 2d 679. It is the patentability of the product claimed and NOT of the recited process steps which must be established. *In re Brown*, 459 F. 2d 531.

In Example 3, Inaba teaches adding polyurethane in the range claimed in claim 4.

Response to Arguments

Applicant's arguments filed June 19, 2003 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claim 3 have been considered but are moot in view of the new ground(s) of rejection.

Applicant states that the medium as recited in instant claim 1 is to recording tapes that clean and remove debris having protrusions and fatty acids. Inaba is still relied upon as Inaba teaches recording mediums providing the structure

Applicant asserts that Hashimoto teaches improving durability and storability but not concerned with cleaning as in the instant application. The Applicant has not provided a persuasive argument. In response to applicant's argument that Hashimoto provides improvement of recording properties and not cleaning, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Hashimoto teaches the same materials and employs using the same materials to remove dust and fluff as cited in Table 2. No differences are seen.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

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1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 6,203,884 to Sato et al. teaches it is known to provide protrusions having a height from 5 to 50 nm formed on a surface (col. 2, lines 20-30 and col. 4, lines 1-25, lines 36-55).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is (703) 305-3809. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tamra L. Dicus
Examiner
Art Unit 1774

September 12, 2003

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

